

Remarks

Further and favorable reconsideration is respectfully requested in view of the foregoing amendment and following remarks.

Initially, although item 6 of the Office Action Summary page includes claims 35 and 36 among the rejected claims, Applicants note that these claims have been withdrawn from further consideration, as correctly indicated in the first paragraph on page 2 of the Office Action.

Claim 1 has been amended to require that the grains of electron conducting material and/or mixed oxide ion conducting material are **completely** filled inside the voids of the porous sintered compact. This feature of the invention is shown in Fig. 1 of the drawings of the present application, where grains 12 are completely filled in pores 13 in the electrode skeleton 11.

The patentability of the presently claimed invention after entry of the foregoing amendment, over the disclosures of the references relied upon by the Examiner in rejecting the claims, will be apparent upon consideration of the following remarks.

Thus, the rejection of the claims under 35 U.S.C. §103(a) as being unpatentable over Komada et al. (JP '614) in view of Wallin (US '270) is respectfully traversed.

The Examiner's comments concerning the Komada et al. reference beginning toward the bottom of page 2 of the Office Action and continuing over onto page 3, state that this reference discloses that the grains are baked inside the voids of the porous sintered compact under the conditions such that the grains "are filled inside the voids (Komada's claim 1)." However, this same argument was presented by the Examiner in the earlier Office Action, and Applicants argued, in response to that earlier Office Action, that Komada et al. do not disclose that the grains are filled inside the voids. The Examiner apparently now agrees with Applicants' argument in this regard, since page 4, lines 6-7 of the current Office Action state that Komada et al. do not disclose that the grains are filled inside the voids, as required by Applicants' claim 1.

The Examiner then relies on the newly cited Wallin reference, which the Examiner states teaches filling the pores of a solid oxide fuel cell electrode with electrocatalyst, such as PrCo_3 .

The Wallin reference teaches that an electrocatalyst is infiltrated into a porous network of a sintered ionically-conductive and electronically-conductive electrolyte structure, and indicates that the primary function of the infiltrated electrocatalyst is to efficiently promote the desired electrochemical reactions within the electrode (column 3, lines 19-30 and 55-57). Wallin does not disclose that this improves thermal shock, which is one of the objectives of the presently claimed invention, for example, as set forth in the paragraph bridging pages 5-6 of the present specification.

More specifically, Wallin discloses that after the mixture of ionically-conductive and electronically-conductive materials has been sintered, the porous structure or assembly that is formed is then infiltrated with **a solution or dispersion** of an electrocatalyst precursor material. Further, Wallin discloses that an electrocatalyst solution that can be formed by heat treating a solution precursor or the residue of evaporation of a solution precursor can be utilized in the porous electrode structure (column 5, lines 47-59).

The working examples of the Wallin reference refer to the use of a 1 M (molar) aqueous solution of, for example, praseodymium nitrate for infiltrating the porous structure, after which the structure is dried and then fired. The result of this process is that the pores of the structure will contain the electrocatalyst, but the pores will not be "completely filled" with the electrocatalyst as required in the presently claimed invention. This is because the heating/firing process will evaporate the water from the aqueous solution, leaving only a relatively small residue of the solid electrocatalyst itself contained in the pores. That is, since an **aqueous solution** of the electrocatalyst is used to infiltrate the porous structure in Wallin, the heating/firing process subsequently applied to the porous structure will **evaporate the water from the aqueous solution in the pores, leaving only a relatively small amount of solid electrocatalyst in the pores**. In any event, the electrocatalyst will certainly **not completely fill** the voids of the structure as required by the presently claimed invention. Therefore, even if the references were combined in the manner suggested by the Examiner, the result of such combination would still not suggest the present invention.

Therefore, in view of the foregoing amendment and remarks, it is submitted that the ground of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

The Commissioner is authorized to charge any deficiency or to credit any overpayment associated with this communication to Deposit Account No. 23-0975, with the EXCEPTION of deficiencies in fees for multiple dependent claims in new applications.

Respectfully submitted,

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By:

A handwritten signature in black ink, appearing to read "Michael R. Davis", is written over a horizontal line.

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